

SEQUENCE LISTING

<110> BIOGEN, INC.
Pepinsky, Blake
Runkel, Laura
Brickelmaier, Margot
Whitty, Adrian
Hochman, Paula

<120> Polymer Conjugates of Interferon Beta-1a
and Uses

<130> A065PCT

<140> PCT/US99/24201

<141> 1999-10-15

<150> 60/104,572

<151> 1998-10-16

<150> 60/120,161

<151> 1999-02-16

<160> 29

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 549

<212> DNA

<213> murine

<400> 1

tccggggggcc atcatcatca tcatcatagc tccggagacg atgatgacaa gatgagctac
60

aacttgcttg gattcctaca aagaagcagc aattttcagt gtcagaagct cctgtggcaa
120

ttgaatggga ggcttgaata ctgcctcaag gacaggatga actttgacat ccctgaggag
180

attaagcagc tgcagcagtt ccagaaggag gacgccgcat tgaccatcta tgagatgctc
240

cagaacatct ttgctatddd cagacaagat tcatctagca ctggctggaa tgagactatt
300

gttgagaacc tcctggctaa tgtctatcat cagataaacc atctgaagac agtcctggaa
360

gaaaaactgg agaaagaaga tttcaccagg ggaaaactca tgagcagtct gcacctgaaa
420

agatattatg ggaggattct gcattacctg aaggccaagg agtacagtca ctgtgcctgg
480

accatagtca gagtggaaat cctaaggaac ttttacttca ttaacagact tacaggttac

A065us.txt

540
ctccgaaac
549

<210> 2
<211> 183
<212> PRT
<213> murine

<400> 2
Ser Gly Gly His His His His His His Ser Ser Gly Asp Asp Asp Asp
1 5 10 15
Lys Met Ser Tyr Asn Leu Leu Gly Phe Leu Gln Arg Ser Ser Asn Phe
20 25 30
Gln Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys
35 40 45
Leu Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Lys Gln Leu
50 55 60
Gln Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu
65 70 75 80
Gln Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp
85 90 95
Asn Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Tyr His Gln Ile
100 105 110
Asn His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Phe
115 120 125
Thr Arg Gly Lys Leu Met Ser Ser Leu His Leu Lys Arg Tyr Tyr Gly
130 135 140
Arg Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser His Cys Ala Trp
145 150 155 160
Thr Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Phe Ile Asn Arg
165 170 175
Leu Thr Gly Tyr Leu Arg Asn
180

<210> 3
<211> 60
<212> DNA
<213> human

<400> 3
ttctccggag acgatgatga caagatgagc tacaacttgc ttggattcct acaaagaagc
60

<210> 4
<211> 39
<212> DNA
<213> human

<400> 4
gccgctcgag ttatcagttt cggaggtaac ctgtaagtc

39

<210> 5
<211> 35
<212> DNA
<213> human

<400> 5
agcttccggg ggccatcatc atcatcatca tagct
35

<210> 6
<211> 35
<212> DNA
<213> human

<400> 6
ccggagctat gatgatgatg atgatggccc ccgga
35

<210> 7
<211> 87
<212> DNA
<213> human

<400> 7
ccggagacga tgatgacaag atggcttacg ccgctcttgg agccctacaa gcttctagca
60
attttcagtg tcagaagctc ctgtggc
87

<210> 8
<211> 60
<212> DNA
<213> human

<400> 8
gatctagcaa tgctgctgt gctgccctcc tggctgcctt gaatgggagg cttgaatact
60

<210> 9
<211> 52
<212> DNA
<213> human

<400> 9
gcctcaagga caggatgaac tttgacatcc ctgaggagat taagcagctg ca
52

<210> 10
<211> 76

A065us.txt

<212> DNA

<213> human

<400> 10

aattgaatgg gagggctgca gcttgcgctg cagacaggat gaactttgac atccctgagg
60

agattaagca gctgca
76

<210> 11

<211> 76

<212> DNA

<213> human

<400> 11

aattgaatgg gaggcttgaa tactgcctca aggacagggc tgcatttgct atccctgcag
60

agattaagca gctgca
76

<210> 12

<211> 51

<212> DNA

<213> human

<400> 12

aattgaatgg gaggcttgaa tactgcctca aggacaggat gaactttgac a
51

<210> 13

<211> 43

<212> DNA

<213> human

<400> 13

tccctgagga gattgctgca gctgcagctt tcgctgcagc tga
43

<210> 14

<211> 78

<212> DNA

<213> human

<400> 14

cgccgcgttg accatctatg agatgctcgc taacatcgct agcattttca gacaagattc
60

atctagcact ggctggaa
78

<210> 15

<211> 78

A065us.txt

<212> DNA
<213> human

<400> 15
cgccgcattg accatctatg agatgctcca gaacatcttt gctattttcg ctgcagcttc
60
atctagcact ggctggaa
78

<210> 16
<211> 72
<212> DNA
<213> human

<400> 16
ggaatgcttc aattggttgc gcactcctga gcaatgtcta tcatcagata aaccatctga
60
agacagttct ag
72

<210> 17
<211> 72
<212> DNA
<213> human

<400> 17
ggaatgagac cattgttgag aacctcctgg ctaatgtcgc tcatcagata gcacatctgg
60
ctgcagttct ag
72

<210> 18
<211> 44
<212> DNA
<213> human

<400> 18
ctagctgcaa aactggctgc agctgatttc accaggggaa aact
44

<210> 19
<211> 69
<212> DNA
<213> human

<400> 19
ctagaagaaa aactggagaa agaagcagct accgctggaa aagcaatgag cgcgctgcac
60
ctgaaaaga
69

A065us.txt

<210> 20
 <211> 51
 <212> DNA
 <213> human

<400> 20
 tattatggga ggattctgca ttacctgaag gccaggagt actcacactg t
 51

<210> 21
 <211> 163
 <212> DNA
 <213> human

<400> 21
 catgagcagt ctgcacctga aaagatatta tggggcaatt gctgcatacc tggcagccaa
 60
 ggagtactca cactgtcatg agcagtctgc acctgaaaag atattatggg aggattctgc
 120
 attacctgaa ggccgctgca tactcacact gtgcctggac gat
 163

<210> 22
 <211> 87
 <212> DNA
 <213> human

<400> 22
 catgagcagt ctgcacctga aaagatatta tgggaggatt ctgcattacc tgaaggcaaa
 60
 ggagtacgct gcatgtgcct ggacgat
 87

<210> 23
 <211> 50
 <212> DNA
 <213> human

<400> 23
 cgtcagagct gaaatcctag caaactttgc attcattgca agacttacag
 50

<210> 24
 <211> 166
 <212> PRT
 <213> human

<400> 24
 Met Ser Tyr Asn Leu Leu Gly Phe Leu Gln Arg Ser Ser Asn Phe Gln
 1 5 10 15
 Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu

A065us.txt

			20					25					30				
Lys	Asp	Arg	Met	Asn	Phe	Asp	Ile	Pro	Glu	Glu	Ile	Lys	Gln	Leu	Gln		
		35					40					45					
Gln	Phe	Gln	Lys	Glu	Asp	Ala	Ala	Leu	Thr	Ile	Tyr	Glu	Met	Leu	Gln		
	50					55					60						
Asn	Ile	Phe	Ala	Ile	Phe	Arg	Gln	Asp	Ser	Ser	Ser	Thr	Gly	Trp	Asn		
65					70					75					80		
Glu	Thr	Ile	Val	Glu	Asn	Leu	Leu	Ala	Asn	Val	Tyr	His	Gln	Ile	Asn		
				85					90					95			
His	Leu	Lys	Thr	Val	Leu	Glu	Glu	Lys	Leu	Glu	Lys	Glu	Asp	Phe	Thr		
			100					105					110				
Arg	Gly	Ala	Leu	Met	Ser	Ser	Leu	His	Leu	Lys	Arg	Tyr	Tyr	Gly	Arg		
		115					120					125					
Ile	Leu	His	Tyr	Leu	Lys	Ala	Lys	Glu	Tyr	Ser	His	Cys	Ala	Trp	Thr		
	130					135					140						
Ile	Val	Arg	Val	Glu	Ile	Leu	Arg	Asn	Phe	Tyr	Arg	Ile	Asn	Arg	Leu		
145					150					155					160		
Thr	Gly	Tyr	Leu	Arg	Asn												
				165													

<210> 25
 <211> 166
 <212> PRT
 <213> human

Met	Ala	Tyr	Ala	Ala	Leu	Gly	Ala	Leu	Gln	Ala	Ser	Ser	Asn	Phe	Gln		
1				5					10					15			
Cys	Gln	Lys	Leu	Leu	Trp	Gln	Leu	Asn	Gly	Arg	Leu	Glu	Tyr	Cys	Leu		
			20					25					30				
Lys	Asp	Arg	Met	Asn	Phe	Asp	Ile	Pro	Glu	Glu	Ile	Lys	Gln	Leu	Gln		
		35					40					45					
Gln	Phe	Gln	Lys	Glu	Asp	Ala	Ala	Leu	Thr	Ile	Tyr	Glu	Met	Leu	Ala		
	50					55					60						
Asn	Ile	Ala	Ser	Ile	Phe	Arg	Gln	Asp	Ser	Ser	Ser	Thr	Gly	Trp	Asn		
65					70					75					80		
Glu	Thr	Ile	Val	Glu	Asn	Leu	Leu	Ala	Asn	Val	Tyr	His	Gln	Ile	Asn		
				85					90					95			
His	Leu	Lys	Thr	Val	Leu	Glu	Glu	Lys	Leu	Glu	Lys	Glu	Ala	Ala	Thr		
			100					105					110				
Ala	Gly	Ala	Ala	Met	Ser	Ala	Leu	His	Leu	Lys	Arg	Tyr	Tyr	Gly	Arg		
		115					120					125					
Ile	Leu	His	Tyr	Leu	Lys	Ala	Lys	Glu	Tyr	Ser	His	Cys	Ala	Trp	Thr		
	130					135					140						
Ile	Val	Arg	Val	Glu	Ile	Leu	Arg	Asn	Phe	Tyr	Arg	Ile	Asn	Arg	Leu		
145					150					155					160		
Thr	Gly	Tyr	Leu	Arg	Asn												
				165													

<210> 26
 <211> 166

<212> PRT
<213> human

<400> 26

Met	Ser	Tyr	Asn	Leu	Leu	Gly	Phe	Leu	Gln	Arg	Ser	Ser	Asn	Ala	Ala	
1				5					10					15		
Cys	Ala	Ala	Leu	Leu	Ala	Ala	Leu	Asn	Gly	Arg	Leu	Glu	Tyr	Cys	Leu	
			20					25					30			
Lys	Asp	Arg	Met	Asn	Phe	Asp	Ile	Pro	Glu	Glu	Ile	Lys	Gln	Leu	Gln	
		35					40					45				
Gln	Phe	Gln	Lys	Glu	Asp	Ala	Ala	Leu	Thr	Ile	Tyr	Glu	Met	Leu	Gln	
	50					55					60					
Asn	Ile	Phe	Ala	Ile	Phe	Ala	Ala	Ala	Ser	Ser	Ser	Thr	Gly	Trp	Asn	
65					70				75						80	
Glu	Thr	Ile	Val	Glu	Asn	Leu	Leu	Ala	Asn	Val	Tyr	His	Gln	Ile	Asn	
				85					90					95		
His	Leu	Lys	Thr	Val	Leu	Glu	Glu	Lys	Leu	Glu	Lys	Glu	Asp	Phe	Thr	
			100					105					110			
Arg	Gly	Ala	Leu	Met	Ser	Ser	Leu	His	Leu	Lys	Arg	Tyr	Tyr	Gly	Ala	
		115					120					125				
Ile	Ala	Ala	Tyr	Leu	Ala	Ala	Lys	Glu	Tyr	Ser	His	Cys	Ala	Trp	Thr	
	130					135					140					
Ile	Val	Arg	Val	Glu	Ile	Leu	Arg	Asn	Phe	Tyr	Arg	Ile	Asn	Arg	Leu	
145					150					155					160	
Thr	Gly	Tyr	Leu	Arg	Asn											
				165												

<210> 27
<211> 166
<212> PRT
<213> human

<400> 27

Met	Ser	Tyr	Asn	Leu	Leu	Gly	Phe	Leu	Gln	Arg	Ser	Ser	Asn	Phe	Gln	
1				5					10					15		
Cys	Gln	Lys	Leu	Leu	Trp	Gln	Leu	Asn	Gly	Arg	Ala	Ala	Ala	Cys	Ala	
			20					25					30			
Ala	Asp	Arg	Met	Asn	Phe	Asp	Ile	Pro	Glu	Glu	Ile	Lys	Gln	Leu	Gln	
		35					40					45				
Gln	Phe	Gln	Lys	Glu	Asp	Ala	Ala	Leu	Thr	Ile	Tyr	Glu	Met	Leu	Gln	
	50					55					60					
Asn	Ile	Phe	Ala	Ile	Phe	Arg	Gln	Asp	Ser	Ser	Ser	Thr	Gly	Trp	Asn	
65					70				75						80	
Ala	Ser	Ile	Val	Ala	Ala	Leu	Leu	Ser	Asn	Val	Tyr	His	Gln	Ile	Asn	
				85					90					95		
His	Leu	Lys	Thr	Val	Leu	Glu	Glu	Lys	Leu	Glu	Lys	Glu	Asp	Phe	Thr	
			100					105					110			
Arg	Gly	Ala	Leu	Met	Ser	Ser	Leu	His	Leu	Lys	Arg	Tyr	Tyr	Gly	Arg	
		115					120					125				
Ile	Leu	His	Tyr	Leu	Lys	Ala	Ala	Ala	Tyr	Ser	His	Cys	Ala	Trp	Thr	
	130					135					140					

A065us.txt

Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Arg Ile Asn Arg Leu
 145 150 155 160
 Thr Gly Tyr Leu Arg Asn
 165

<210> 28
 <211> 166
 <212> PRT
 <213> human

<400> 28

Met Ser Tyr Asn Leu Leu Gly Phe Leu Gln Arg Ser Ser Asn Phe Gln
 1 5 10 15
 Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
 20 25 30
 Lys Asp Arg Ala Ala Phe Ala Ile Pro Ala Glu Ile Lys Gln Leu Gln
 35 40 45
 Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
 50 55 60
 Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
 65 70 75 80
 Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Ala His Gln Ile Ala
 85 90 95
 His Leu Ala Ala Val Leu Glu Glu Lys Leu Glu Lys Glu Asp Phe Thr
 100 105 110
 Arg Gly Ala Leu Met Ser Ser Leu His Leu Lys Arg Tyr Tyr Gly Arg
 115 120 125
 Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ala Ala Cys Ala Trp Thr
 130 135 140
 Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr Arg Ile Asn Arg Leu
 145 150 155 160
 Thr Gly Tyr Leu Arg Asn
 165

<210> 29
 <211> 167
 <212> PRT
 <213> human

<400> 29

Met Ser Tyr Asn Leu Leu Gly Phe Leu Gln Arg Ser Ser Asn Phe Gln
 1 5 10 15
 Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg Leu Glu Tyr Cys Leu
 20 25 30
 Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu Ile Ala Ala Ala Ala
 35 40 45
 Ala Phe Ala Ala Ala Asp Ala Ala Leu Thr Ile Tyr Glu Met Leu Gln
 50 55 60
 Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser Ser Thr Gly Trp Asn
 65 70 75 80
 Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val Ala Tyr His Gln Ala

A065us.txt

				85					90					95		
Asn	His	Ala	Lys	Thr	Ala	Leu	Ala	Ala	Lys	Leu	Ala	Ala	Ala	Asp	Phe	
			100						105					110		
Thr	Arg	Gly	Ala	Leu	Met	Ser	Ser	Leu	His	Leu	Lys	Arg	Tyr	Tyr	Gly	
		115						120					125			
Arg	Ile	Leu	His	Tyr	Leu	Lys	Ala	Lys	Glu	Tyr	Ser	His	Cys	Ala	Trp	
		130				135						140				
Thr	Ile	Val	Arg	Ala	Glu	Ile	Leu	Ala	Asn	Phe	Ala	Arg	Ile	Ala	Arg	
145					150					155					160	
Leu	Thr	Gly	Tyr	Leu	Arg	Asn										
				165												